

YEPATKO, Yu.M. [IEpatko, IU.M.]; MEL'NIK, Yu.P. [Mel'nyk, IU.P.]

Role of supergene leaching out of quartz during the enriching of
iron rocks and ores from the Saksagan' area of the Krivoy Rog
Basin. Geol. zhur. 18 no.5:69-69 '58. (MIRA 12:1)
(Krivoy Rog Basin--Iron-ores) (Ore dressing)

YEPATKO, Yu.M. [IEpatko, IU.M.]; MEL'NIK, Yu.P. [Mel'nyk, IU.P.]

Some experimental and theoretical data on the formation of
goethite and hematite in the weathering surface of the Krivoy
Rog iron ore basin. Geol. zhur. 25 no.2:12-21 '65.

(MIRA 18:6)

1. Institut geologicheskikh nauk AN UkrSSR.

YEPATKO, Yu. M.

BELEVTSOV, Yakov Nikolayevich; BURA, Galina Georgiyevna; DUBINKINA, Raisa Pavlovna; YEPATKO, Yuriy Mikhaylovich; ISHCHENKO, Dmitriy Ivanovich; MEL'NIK, Yuriy Petrovich; STRYGIN, Aleksey Il'ich. Prinimali uchastiye: KOZHARA, V.L.; KRAVCHENKO, V.M.; TAKHTUYEV, G.V.; SHCHERBAKOVA, K.F.. RODIONOV, S.P., otv.red.; ZAVIRYUKHINA, V.N., red. izd-va; YEFIMOVA, M.I., tekhn.red.

[Genesis of iron ores in the Krivoy Rog Basin] Genezis zheleznykh rud Krivorozhskogo basseina. Kiev, Izd-vo Akad.nauk USSR, 1959. (MIRA 13:2) 306 p.

1. Chlen-korrespondent AN USSR (for Rodionov).
(Krivoy Rog Basin--Iron ores)

BELEVTSOV, Ya.N.; YEPATKO, Yu.M.; STRYGIN, A.I.

Subsurface oxidation zones in the Krivoy Rog Basin. Sov.geol.
2 no.11:110-123 N '59. (MIRA 13:5)

1. Institut geologicheskikh nauk AN USSR.
(Krivoy Rog Basin--Oxidation)

YEPATKO, Yu.M.; SHNYUKOV, Ye.F.

Conditions governing the formation of carbonate concre-
tions in the Kerch basin. Zap. Ukr. otd. Min. ob-va [no.1]:
75-82 '62. (MIRA 16:8)

1. Institut geologicheskikh nauk AN UkrSSR, Kiyev.

BELEVSEV, Ya.N. [Bielievsev, IA.M.]; YEPATKO, Yu.N. [IEpatko, IU.M.];
PETUKHOVA, G.N. [Petukhova, H.M.]

Solubility of quartz and hematite in waters of various composition.
Geol. zhur. 20 no. 5:51-56 '60. (MIRA 14:1)
(Quartz) (Hematite)

YEPATKO, Yu.M. [IEpatko, IU.M.]; LAGUTIN, P.K. [Lahutin, P.K.]; LALO, V.M.

Experimental data on the leaching of quartz-feldspar sandstones.
(MIRA 16:4)
Geol. zhur. 23 no.1:89-92 '63.

1. Institut geologicheskikh nauk AN UkrSSR.
(Sandstone) (Leaching)

BELEVTSOV, Ya.N.; FOMENKO, V.Yu.; NOTAROV, V.D.; MOLYAVKO, G.I.; MEL'NIK, Yu.P.; SIROSHAN, R.I.; DOVGAN', M.N.; CHERNOVSKIY, M.I.; SHCHERBAKOVA, K.F.; ZABORUYKO, L.G.; GOROSHNIKOV, B.I.; AKIMENKO, N.M.; SEMERGEYEVA, Ye.A.; KUCHER, V.N.; TAKHTUYEV, G.V.; KALYAYEV, G.I.; ZARUBA, V.M.; NAZAROV, P.P.; MAKSIMOVICH, V.L.; STRUYEVA, G.M.; KARSHENBAUM, A.P.; SKARZHINS'YA, T.A.; CHEREDNICHENKO, A.I.; GERSHOY, Yu.G.; PITADE, A.A.; PADUTSKAYA, P.D.; ZHILKINSKIY, S.I.; KAZAK, V.M.; KACHAN, V.G.; STRIGIN, A.I., red.; LADIYEVA, V.D., red.; ZHUKOV, G.V., red.; YEPATKO, Yu.M., red.; SHCHERBAKOV, B.D., red.; SLENZAK, O.I., red. izd-va; RAKHLINA, N.P., tekhn. red.

[Geology of Krivoy Rog iron-ore deposits] Geologiia Krivorozhskikh zhelezorudnykh mestorozhdenii. Kiev, Izd-vo Akad. nauk USSR.

Vol.1. [General problems in the geology of the Krivoy Rog Basin.

Geology and iron ores of the deposits of the "Ingulets,"

Rakhmanovo, and Il'ich Mines] Obshchie voprosy geologii Krivbassa.

Geologicheskoe stroenie i zheleznye rudy mestorozhdenii rudnikov

"Ingulets," Rakhmanovskogo i im. Il'icha. 1962. 479 p.

(Krivoy Rog Basin—Mining geology) (MIRA 16:3)

(Krivoy Rog Basin—Iron ores)

YEPET' BOYM, P.

Practices of Starchenkovskiy Brick Factory in producing ceramic
ribbon roofing tiles. Sil'. bud. 10 no.1:19-21 Ja '60.
(MIRA 13:5)

1. Nachal'nik otdela stroitel'nykh materialov Kiyevskogo
oblmezhkolkhozstroya.
(Starchenkovskiy District--Brick industry)

YEPPEL'BOYM, P.

How to sample clay to be used in laboratory and semiindustrial testing. Sil'.bud. 10 no.5:18-19 My '60.
(MIRA 13:7)

1. Nachal'nik ot dela stroitel'nykh materialov Kiyevskogo oblastnogo kol'khozstroya.
(Clay--Testing)

YEPPEL'BOIM, P.

We are organizing mass production of hollow bricks. Sil'. bud. 11
(G.A. 1/1)
no. 3:15-17 Mr '61.

1. Nachal'nik otdela stroymaterialov Kiyovskogo oblmen'koll'chozstroika.
(Kiev Province--Hollow bricks)

YEPERIN, P.P.; KREBETIKOVA, Z.P.

Our proposals. Elekt. i teplo. tsiaga no. 5:11-13 My '57. (MIRA 10:?)

1. Zamestitel' nachal'nika slushby lokomotivnogo khonyaystva
Sverdlovskoy zheleznoy dorogi (for Yeperin). 2. Nachal'nik otdela
remonta Sverdlovskoy zheleznoy dorogi (for Khebtikova).
(Locomotives--Maintenance and repair)

YEPERIN, P.P.; TRET'YAK, T.P.

Our results and reserves for further economizing of electric
energy. Elek. i tepl. tsiaga 4 no.1:4-6 Ja '60.
(MIRA 13:4)

1. Glavnnyy inzhener sluzhby lokomotivnogo khozyaystva Sverdlov-
skoy dorogi (for Yeperin). 2. Glavnnyy inzhener sluzhby elektrifi-
katsii i energeticheskogo khozyaystva Sverdlovskoy dorogi
(for Tret'yakov).

(Electric railroads--Cost of operation)

Yepeykina, K.P.

USSR/Analytical Chemistry - Analysis of Inorganic Substances

G-2

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4790

Author : Babkin, R.L., Yepeykina, K.P.

Title : Rapid Determination of Nitrates in Boiler Water

Orig Pub : Energetik, 1956, No 8, 13-14

Abstract : The method which the authors recommend as a rapid method is based on the possibility of a direct titration of NO_3^- with a solution of indigocarmine (I) in a strongly acid medium. Into a 100 ml flask are placed 10 ml of the water being investigated, 10 ml concentrated H_2SO_4 (Sp. Gr. 1.84) are rapidly added and the hot solution is titrated immediately with a solution of I to a dirty-green coloration. To prepare the titrating solution of I, a weighed sample of finely comminuted I is placed into a porcelain dish, carefully moistened with concentrated H_2SO_4 (6.8 ml H_2SO_4 per 1 g I), heated with

Card 1/2

- 37 -

USSR/Analytical Chemistry - Analysis of Inorganic Substances

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4790

G-2

occasional stirring on a water bath until completely dissolved, diluted to the predetermined volume, allowed to stand for 5-6 days, filtered, and the titer of this solution is then determined by using a standard solution of KNO_3 or NaNO_3 . Since the main reaction is accompanied by secondary processes it is necessary to adhere strictly to the set conditions of titration.

Card 2/2

- 38 -

BABKIN, R.L., inzh.; YEPYKINA, K.P., inzh.

Determining microquantities of silicon and phosphorus in condensate.
Elek.sta. 29 no.6:34-37 Je '58. (MIRA 11:9)
(Silicon--Analysis) (Phosphorus--Analysis) (Steam--Analysis)

BABKIN, R.L., inzh.; YEPENYKINA, K.P., inzh.

Determining pH of weakly buffered mediums. *Teploenergetika*
7 no.2:66-70 1960. (MIRA 13:5)

1. Vostochnyy filial Vsesoyuznogo teplotekhnicheskogo instituta.
(Hydrogen-ion concentration)

BABKIN, R.L., inzh.; YEPEYKINA, K.P.-----

Analysis of oxygen dissolved in water. Teploenergetika 9 no.2:
48-54 F '62. (MIRA 15:2)

1. Vostochnyy filial Vsesoyuznogo teplotekhnicheskogo instituta.
(Water--Analysis) (Colorimetry)

YEPIFANOV, A.

Radioperedaiushchie ustroistva. [Radio transmitting equipment]. Moskva, Voenmorizdat, 1945, 159 p. illus. .

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress, Reference department, Washington, 1951, Unclassified.

L 11561-65 EWT(d)/EWT(t)/EWP(c)/EMA(d)/EWP(+)/T/EEC(b)-2/EWP(k)/EWP(h)/EWP(l)/EMA(h)
Pm-4/Po-4/Pq-4/Pf-4/Pg-4/Peb/Pl-4

ACCESSION NR AM5012948

BOOK EXPLOITATION

UR/

Iepifanov, Aleksandr Dmitriyevich

48
81

Reliability of automatic systems (Nadzhernost' avtomaticheskikh sistem) Moscow,
Izd-vo "Mashinostroyeniye", 64. 1335 p. illus., biblio. Errata slip inserted.
9,600 copies printed.

TOPIC TAGS: automation, operation research, production engineering

PURPOSE AND COVERAGE: The book presents the theoretical principles of automatic system reliability and offers methods of analysis and synthesis of systems with and without redundancy, restored and non-restored. Most of the theoretical propositions are illustrated with block diagrams. The book is intended for broad sections of scientific and technical engineering personnel connected with design development and operation of automatic systems and also as an aid for students of higher educational institutions at course and diploma design.

TABLE OF CONTENTS (abridged):

Foreword -- 3
Ch. I General data on automatic system reliability -- 7
Ch. II Time characteristics of the faultless operation of systems, component
Card 1/2

L 44561-65

ACCESSION NR AM5012948

and restoration of systems. — 33
Ch. III Effect of the operational conditions on the faultless operation of components and systems — 90
Ch. IV Faultless operation of automatic systems without redundancy and restoration — 114
Ch. V Steady redundancy in automatic systems — 167
Ch. VI Redundancy with application of logical circuits — 214
Ch. VII Reliability of restored systems — 241
Ch. VIII Methods of experimental determination of reliability of elements and systems — 294

Bibliography — 332

SUBMITTED: 22Oct64

NO REF Sov: 022

SUB CODE: DP, IK

OTHER: 023

NU
Card 2/2

YEPIFANOV, A.P.; inzh.

Excellent track maintenance under difficult conditions. Puti i put.
khoz. no.4:9-10 Ap '59. (MIRA 13:3)

1.Nachal'nik distantsii, stantsiya Vavilovo, Ufimskoy dorogi.
(Chelyabinsk Province--Railroads--Maintenance and repair)

YEPIFANOV, A.R., podpolkovnik.

Eliminate mistakes in cadets' piloting technique. Vest.Vozd.Fl.
40 no.7:58-63 J1 '57. (MIRA 10:11)
(Flight training)

1. YEPIFANOV, B. P..
2. USSR (600)
4. Iron Ores--Tula Province
7. Calculation of the Tula iron ore reserves based on prospecting and previous surveys, for January 1, 1944. Izv. Glav. upr. geol. fon. no. 2 1947.
9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

170761
YEPIFANOV, B. P.

USSR/Geology - Sedimentary Rocks

Mar/Apr 51

"On Pustovalov's Article 'Problem of Scientific State of Sedimentary Rocks,'" Assoc Prof B. P. Yepifanov, Voronezh State U

"Iz Ak Nauk, Ser Geol" No 2, pp 139-149

Yepifanov outlines his opinion on Pustovalov's errors in latter's theory of "sedimentary differentiation" and "periodicity law of deposit formation" and on his incorrect application of Marxian dialectical methods to theory of sedimentary rocks.

180761

LC

TEPIFANOV, B.P.

Interrelations between ferruginous quartzites and overlaying pre-Cambrian shale-carbonate series found in the Voronezh anticline. Dokl.AN SSSR 107: no.3:453-454 Mr '56. (MIRA 9:7)

1. Moskovskiy institut tsvetnykh metallov i zolota imeni M.I. Kalinina. Predstavлено академиком N.M.Strakhovym. (Voronezh--Geology, Stratigraphic)

"APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R001962710009-6

On the Geologic Map
Tinian

APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R001962710009-6"

,AUTHOR:

Yepifanov, B.P.

20-2-54/50

TITLE:

On the Geological Conditions of the Iron-Ore Horizons of Lipetsk and Tula (O geologicheskikh otnosheniyakh lipetskogo i tul'skogo zhelezorudnykh gorizontov)

PERIODICAL:

Doklady AN SSSR, 1957, Vol. 116, Nr 2, pp. 284 - 286 (USSR)

ABSTRACT:

These two ore deposits were considered as results of the accumulation of brown iron oxides in a network of lakes at the beginning or in the middle of the Jurassic era, i.e. as of the same age and formed under the same conditions. It was later on proved, however, that the Tula ores were formed in littoral-marine lagoons in the middle of the Visé epoch. Material for a similar revision concerning the Lipetsk ores also exists now. The paleontological material indicates that the Lipetsk ore horizon can by no means be younger than Lower Carboniferous. The lithological characteristics do not admit the assumption that the deposits of the ore horizon in one and the same reservoir were accumulated with the Jurassic rocks covering it. This is also contradicted by a complete absence of remains of Jurassic organism and by the cutting off of the ore horizon by Jurassic rocks. A further precise definition of the stratigraphic position of the Lipetsk ore horizon at first view meets

Card 1/3

20-2-34/50

On the Geological Conditions of the Iron-Ore Horizons of Lipetsk and Tula

with insuperable difficulties. It is deposited on limestones of the Fran stage and is covered by Middle Callovian rocks. The author's observations showed, however, that the Lipetsk ores northward rise to higher Devonian horizons and then to the Lower Tourné. Nowhere, however, they lie on carboniferous (stalinogorsk) deposits. On the contrary, in the Tula and Smolensk regions iron ores were discovered under the carboniferous deposits. The totality of data leads to the conclusion that the Lipetsk ore horizon is of the same age as the bauxite horizon of the Moscow basin, and northward goes over onto the latter. It belongs to the lake stage, of facies of the carboniferous period. The original siderite nature of the Lipetsk ores was supposed and proved, too. These siderites shall be considered as diagenetic. Consequently certain common features of the Tula and Lipetsk ore horizons are explained by their belonging to the humid formation of the Visé stage and by their common history in the Post-Paleozoic (namely washing out in the Mesozoic). The differences between them, especially the lack of remains of marine fauna in the Lipetsk ores, is explained by their belonging to different facies. The technological differences of the Lipetsk ores, well-known to the metallurgists, are to be traced to their original siderite-like nature. There are

Card 2/3

20-2-34/50

On the Geological Conditions of the Iron-Ore Horizons of Lipetsk and Tula

1 figure, 1 table and 14 Slavic references.

ASSOCIATION: Moscow Institute for Nonferrous Metals and Gold imeni M.I. Kalinin
(Moskovskiy institut tsvetnykh metallov i zolota im. M.I. Kalinina)

PRESENTED: May 3, 1957, by N.M. Strakhov, Academician

SUBMITTED: April 28, 1957

AVAILABLE: Library of Congress

Card 3/3

YEPIFANOV, B.P.

Pre-Cambrian stratigraphy on the Kursk-Voronezh arch. Mat. po geol.
i pol. iskop. tsentr. radio. evrop. chasti SSSR no.2:28-52 '59.
(MIRA 13:9)

1. Institut tsvetnykh metallov i zolota im. Kalinina.
(Kursk Magnetic Anomaly--Geology, Stratigraphic)

YEPIFANOV, Boris Yefimovich, kandidat tekhnicheskikh nauk; SMIRENNIKOV,
Pavel Stepanovich, inzhener; ORESHKIN, B.S., redaktor; ARNOL'DOVA,
K.S., redaktor izdatel'stva; SHITS, V.P., tekhnicheskii redaktor;

[Operation and repair of railroads for transportation of lumber]
Eksploatatsiya i remont lesovoznykh zheleznykh dorog. Moskva,
(MIRA 10:5)
Goslesbumiziat, 1956. 207 p.
(Lumber--Transportation) (Railroads)

BELOZERTSEV, Vasiliy Yefimovich, kand.tekhn.nauk; KUVSHINSKIY, V.V.,
, inzh., retsenzent; YAKIMOV, B.Ye., dotsent, kand.tekhn.nauk,
retsenzent; IONOV, B.D., red.; PITERMAN, Ye.L., red.izd-va;
PARAKHINA, N.L., tekhn.red.

[Road-building machinery] Dorozhmostroitel'nye mashiny. Moskva,
Goslesbumisdat, 1960. 263 p. (MIRA 14:3)
(Road machinery)

YEFIFANOV, Boris Yefimovich, dotsent; IONOV, Boris Dmitriyevich, dotsent; KOHUNOV, M.M., prof., retsenzent; SHCHELKUNOV, V.V., dotsent, retsenzent; SHCHEMKOV, P.N., dotsent, retsenzent; SMIRNOV, A.I., dotsent, red.; PITERMAN, Ye.L., red.izd-va; VDOVINA, V.M., tekhn.red.

[Road-building machinery in the forest industries and principles of road building] Dorozhno-stroitel'nye mashiny v lesnoi promyshlennosti i osnovy dorozhnogo dela. Moskva, Goslesbumizdat, 1961. 376 p.

1. Ural'skiy lesotekhnicheskiy institut (for Korunov). 2. Arkhangelskiy lesotekhnicheskiy institut (for Shchelkunov).
(Road machinery) (Wood-using industries)

YEPIFANOV, Dmitriy Yefimovich; (SIPOV, G.A., otv.red.; FROLIOVA, Ye.I.,
red.izd-va; SHKLYAR, S.Ya., tekhn.red.

[Protective grounding of electric systems in mining] Zashchitnye
zazemleniya elektricheskikh ustroystv v gornorudnoi promyshlennosti. Moskva, Gos.naukno-tekhn.izd-vo lit-ry po gornomu delu,
1960. 161 p. (MIRA 14:6)

(Electricity in mining)
(Electric currents—Grounding)

KISHINSKIY, Mikhail Il'ich, kand. tekhn. nauk, dots.; YEPIFANOV,
Boris Yefimovich, kand. tekhn. nauk, dots.; SMIRENNIKOV,
Pavel Stepanovich, inzh.; STRASHINSKIY, B.A., inzh.,
retsenzent; NOVIKOV, G.G., prepodavatel', retsenzent;
GAVRILOV, I.I., red.

[Use and repair of logging roads] Ekspluatatsia i remont
lesovoznykh dorog. Izd.2., perer. Moskva, Izd-vo "Lesnaia
promyshlennost', " 1964. 40. p. (MIRA 17:7)

1. Alatyrskiy lesotekhnicheskiy tekhnikum (for Novikov).

YEPIFANOV, G., inzh.; YERMOLOV, Yu., inzh.

Standardize the design of safety valves. *Basop.truda v prom.* 6
no.6:33 Je '62. (MIRA 15:11)
(Pressure vessels--Safety appliances)

USSR/Diseases of Farm Animals. Diseases Caused by
Bacteria and Fungi

R-1

Abs Jour: Ref Zhur-Biol., No 18, 1958, 83537

Author : Yefifanov, G. E.

Institute: Siberian Scientific Research Veterinary Institute

Title : The Diagnostic Value of Blood Serum Reaction in Para-
tuberculosis Enteritis in Cattle.

Orig Pub : Sb. nauchn. rabot Sibirska. n.-i. vet. in-ta, 1957,
vyp. 7, 195-197

Abstract : Allergic tests with fowl tuberculin may fail on all
the animals of the herd in long lasting paratubercu-
losis (P) enzooty. Control of P on farms can not
always be achieved with methods of allergic examina-
tions alone. The blood serum reaction is of great
diagnostic importance and is recommended for wider use.
-- From the author's summary.

COUNTRY : USSR R
CATEGORY : Diseases of Farm Animals. General Problems
AEC. JOUR. : RZhBiol., №.13,1958 №. 59682
AUTHOR : Epifanov, G.
INST. :
TITLE : Therapeutic Properties of Colostric Curds

CPIG. PUB. : S. kh. Sibiri, 1957, No 12, 73-74

ABSTRACT : For the treatment and prophylaxis of gastrointestinal diseases of the young stock, dry colostric curds (DCC) were applied with a good result. For the prophylaxis, DCC was administered once a day along with food in the following doses: to a calf, up to 10 days of age - 20 to 35 g.; from 10 to 20 days of age - 50 to 70 g.; to a young pig, up to 20 days of age - 2 to 3 g., and to an older one - 3 to 5 g. Sick animals were given DCC twice daily

Card: 1/2

R - 1

COUNTRY	:	USSR	R
CATEGORY	:	Diseases of Farm Animals. General Problems	
ART. JOUR.	:	ZM Biol., No. 13, 1958, No. 59682	
AUTHCR	:		
INST.	:		
TITLE	:		
CRIG. PUB.	:		
ABSTRACT	:	in twice as high doses. The technique of preparation of DCC is described.-- L. S. Kirichenko	
cont'd.			
Card:	2/2		

USSR / Virology. Human and Animal Viruses. Swine Disease Viruses. E-3

Abs Jour : Ref Zhur - Biol., No 20, 1958, No 90592

Authors : Okuntaov, I. V.; Yefifanov, G. F.

Inst : Siberian Veterinary Scientific Research Institute

Title : Experimental Studies of Immunization of Hogs Against Plague
With Dry Rabbit Vaccine.

Crig Pub : Byul. nauchno-tekh. inform. Sibirsk. n.-i. in-t, 1958, No. 3
21-23.

Abstract : No abstract given.

Card 1/1

12

F.
YEPIFANOV, G., nauchnyy sotrudnik.

Hogging off potato fields. Munka i pered. op. v sel'khoz. 8 no.5:
42 My '58.
(MIRA 11:5)

1. Sibirskiy nauchno-issledovatel'skiy veterinarnyy institut.
(Swine--Feeding and feeding stuffs) (Potatoes)

YEPIFANOV, G.P., referent.

Testing a virus passed through rabbits for use in immunizing swine
against plague (from "Bulletin de l'Académie Vétérinaire de France",
XXVI, No.9, 1953). Veterinaria 35 no.6:75-76 Je '58. (MIRA 11:6)
(Swine plague)

ROMANCHENKO, I.P.; OVSYANOV, N.I.; YEPIFANOV, O.F.; OVANESOVA, N.B.;
SHMULEVICH, I.S.

Throughout the Soviet Union. Veterinariia 35 no. 7:92-95 J1 '58.
(Veterinary medicine)

OKUNTSOV, I.V., kand.vet.nauk, masluzhennyi veterinarnyy vrach RSFSR;
YEPIFANOV, G.F., nauchnyy sotrudnik

Larinized vaccine against hog cholera in experiments and in practice.
Veterinariia 36 no.2:48-51 F '59. (MIRA 12:2)

1. Sibirskiy nauchno-issledovatel'skiy veterinarnyy institut.
(Omsk Province--Hog cholera)

YEPIFANOV, G.Y.

Parakeratosis, an equilibrium disorder syndrome related to the feeding of pigs. L. Perper, L. Placidi. Recueil de Medecine Veterinaire de L'ecole d'Alfort, CXXXII, No.12, 1956. Veterinaria 36 no.3:82 Mr '59.
(MIRA 12:4)

(Swine—Diseases and pests)

YEPIFANOV, G., starshiy nauchnyy sotrudnik

New books on veterinary medicine. Veterinariia 37 no.4:
89 Ap'60. (MIRA 16:6)

1. Sibirskiy nauchno-issledovatel'skiy veterinarnyy in-
stitut.
(BIBLIOGRAPHY--VETERINARY MEDICINE)

YEPIFANOV, G.F.; VARDOSANIDZE, D.G.; ALIVERDIYEV, A.A.; GUL'YEV, P.K.

Information and brief news. Veterinaria 38 no. 7:95-96
(MIRA 16:8)
Jl. 161.

(Veterinary medicine)

LOBANOV, K.P.; YEPIFANOV, G.F., kand.veterin.nauk

Eradication of hog cholera in Omsk Province. Veterinariia 40
no.7:25-26 Jl '63. (MIRA 16:8)

1. Nachal'nik veterinarnogo otdela Omskogo oblastnogo upravleniya
proizvodstva i zagotovok sel'skokhozyaystvennykh produktov (for
Lobanov). 2. Sibirskiy nauchno-issledovatel'skiy veterinarnyy
institut (for Yefifanov).
(Omsk Province--Hog cholera)

BORISOVICH, Yu.F.; YEFIFANOV, G.F.; MEL'NIKOV, P.; SERGIYENKO, Ye.S.;
SHEVCHENKO, R.; FROLOV, L.; LODYANOV, V.; NIKOL'SKIY, Ya.D.;
LUZYANIN, D.; AZIMOV, D.

Information and brief news. Veterinariia 40 no.2:91-96 F '63.
(MIRA 17:2)

OKUN'KOV, P.; OSTAPENKO, K.; YEPIFANOV, G.F.; MEDVEDEV, I.D.; FORTUSHNYY, V.;
IERAGIMOV, R.P.; KOLEGAYEV, G.

Brief news. Veterinariia 41 no.12:101-109 D '64. (MIRA 18:9)

OSTAPENKO, K.; KRYKIN, A.; DUL'NEV, V.I.; OSETROV, V.S.; TOPALIAN, K.M.;
FEDOROV, Yu.; YATSYSHIN, A.I.; TITOK, V.A.; YEPIFANOV, G.;
RASTEGAYEV, Yu.

Controlling little-known animal diseases. Veterinariia 42
no.8:118-124 Ag '65' (MIRA 18:11)

YEPIFANOV, G.F., kand. veterin. nauk

Practices in the extermination of hog cholera. Veterinaria 41
no.9:4-6 S '64. (MIRA 18:4)

1. Sibirskiy nauchno-issledovatel'skiy veterinarnyy institut.

Ca

9

Change of physical properties of cold-drawn brass on annealing. U. I. Rybinov (Phys. Lab., Dzaudzhikau). *J. Tech. Phys. (U.S.S.R.)* 10, 1476-82 (1946) (in Russian). — Brass (Cu 64.20, Zn 25.11) wire of 1.0 mm. diam. was drawn out, with ice-cooling, to a diam. of 0.60 mm.; spiral-shaped samples were annealed progressively, by steps of 30°, for 3 min., at t from 24° to 300°. The electrical resistivity (ρ at 84°) falls with rising t , by approx. 15%, between 24° and 100°. The curve differs from that of Tammann (*Ann. Physik* 16, 111, 607 (1933); *Z. Metallkunde* 26, 97 (1934)). In that it shows three discontinuities of ρ around $t = 100$, 200, and 300°. The same 3 discontinuities appear, even more distinctly, in the curve of the thermoelectric e.m.f. V of brass wire annealed at t against the same wire slowly annealed at 400°, 30 min. Correspondingly, plots of dV/dt against t show 3 distinct max. in the temp. intervals 90-120°, 180-210°, and 300-300°, those of dV/dt at 90-120°, 180-180°, and 200-300°. N. T.

Ca

CA

Energy balance of the process of cutting metals. G. I. Epidanov and P. A. Retbinder. Doklady Akademii Nauk S.S.R. 66, 653-4 (1949).—The amt. of energy absorbed as excess potential energy of the crystal lattice of the plastically deformed shavings produced in the drilling of the Al, detd. by the difference of the mech. work A and the calorimetrically measured evolved heat Q , proved to be a very small fraction of A ; its variation in the presence of capillary-active substances is within the limits of exper. error. Thus, in n-pentyl ketone, and in suln. (ronon), heptyl alc. (243), and cetyl alc. (61), $100(A - Q)/A = 2.6, 0.8, 1.0, 1.1$, and 1.1%, resp. At equal thickness of the removed metal layer (equal time of drilling), presence

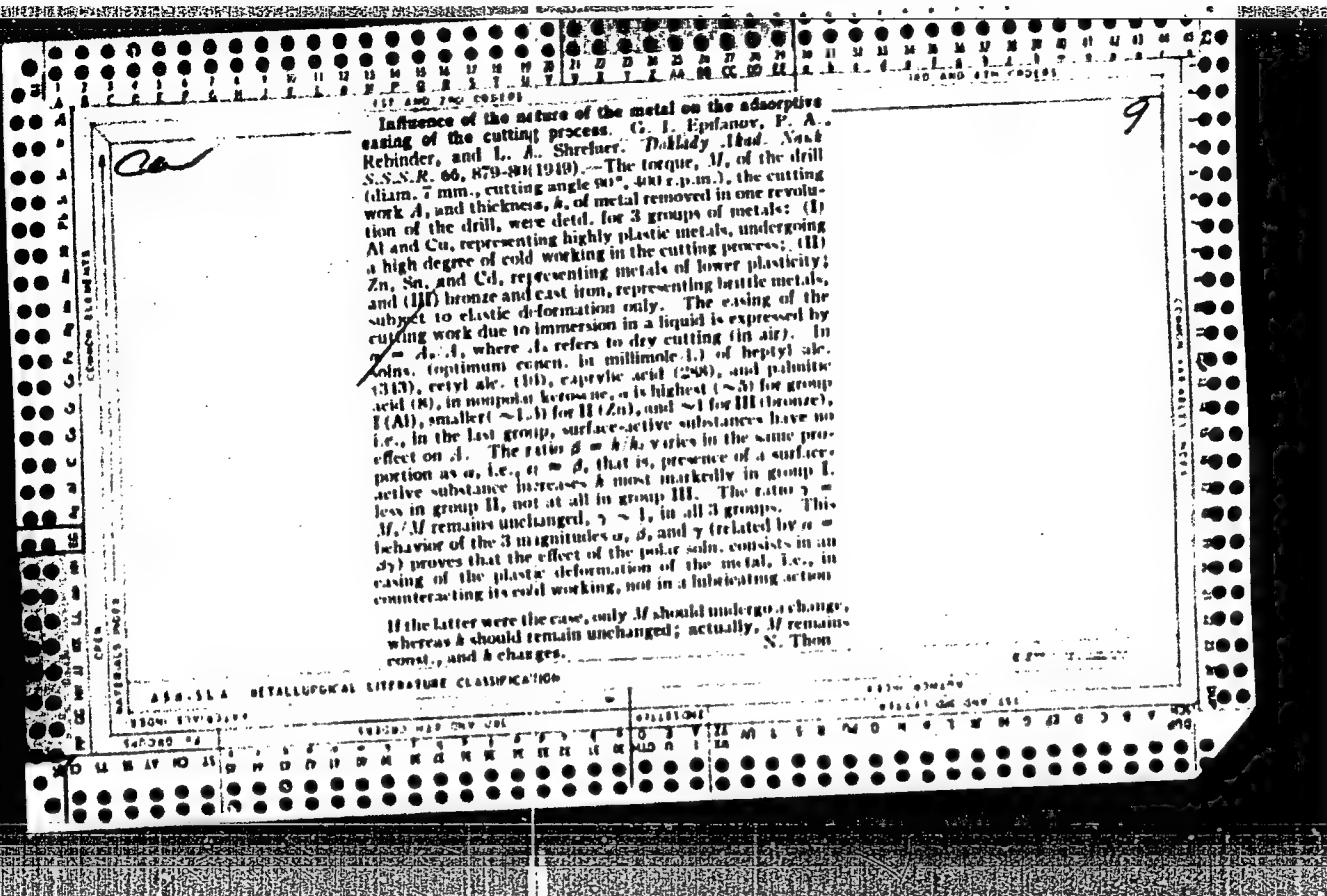
of capillary-active substances decreases η about 2-3 times as compared with the pure nonpolar solvent. The significance of this fraction of the total energy absorbed, owing to plastic deformation in the stretching process, is attributed to a sort of auto-phenomenon wherein, beginning with a certain degree of cold-working, further strain results in no further absorption of energy. This point is not reached in the usual depths of plastic deformation of metals. For Al, the work of cutting is of the order of 10^4 ergs/sq. cm., the absorbed energy of the order of 10^3 , i.e., about 1%, in agreement with the estpt. N. Thom

AM-32A METALLURGICAL LITERATURE CLASSIFICATION

1994 VOL 19(2)

APPROVED FOR RELEASE: 09/01/2001

CIA-RDP86-00513R001962710009-6"



PA

9

Influence of the mechanical properties of metals on the effectiveness of liquid media in free shaving. G. I. Efimov. (Acad. Sci. U.S.S.R., Moscow). Doklady Akad.

Nauk S.S.R. 75, 415-18 (1960).—Surface-active liquid media lower the work of cutting in metals of high plasticity, but have very little effect on low-plasticity brittle metals. The 1st group should comprise the face-centered cubic metals Al and Cu, whereas in Sn and Zn, resp., tetragonal and hexagonal, plastic flow is limited to few slip planes, and brittle rupture occurs at a relatively early stage of the shaving operation. A 3rd group includes typically brittle metals, bronze, cast iron, and Sb, the cutting of which involves practically no plastic deformation. The degree of plastic deformation in the milling of annealed samples of pure Al, Cu, Sn, and Zn was detd. by the ratio of the length of the cut and the length of the chip. In dry milling, this ratio was (in the above order) 7.3, 4.3, 1.88, and 1.08; under BuOH, 2.8, 2.7, 1.65, and 1.60. Consequently, the effect of the surface-active medium, BuOH, is most marked with the most highly plastic metals, and is relatively insignificant with Sn, and, even more, with Zn. For the highly plastic metals, the work of plastic deformation makes

up the major part of the work of cutting. The following data give the hardness (kg./sq. mm.), the sp. work of cutting (kg./cc.) under dry conditions, and the same under BuOH: Al, 20, 90, 29.5; Cu, 60, 130, 67; Sn, 8.3, 11.4, 8.0; Zn, 52, 46.8, 42.8; bronze, 105, 62, 62; cast iron, 30.5, 62, 45; Sb, 50, 1.8, 1.4. The work of cutting clearly increases with the plasticity of the metal; thus, at approx. equal hardness, 40-50, that work is only 1.8 in the case of Sn, increases to 46.8 for Zn, and to 130 for Cu; for cast iron, it is 1.6 times as low as for Al, despite the considerably greater hardness, and comparison of Sn with Sb shows for Sb work of cutting only one-sixth of that of Sn, despite a hardness 7 times as great. In the series of the above 7 metals, the ratio of the work expended on shaving under dry conditions and in BuOH is, resp., 3.1, 1.94, 1.43, 1.1, 1.0, 1.38, 1.28. In the case of the plastic metals, the lowering of the work by the surface-active medium is due to a decrease of the plastic deformation, or, in other words, to earlier occurrence of brittleness. The effectiveness of the surface-active medium decreases with decreasing susceptibility to cold-work, and disappears almost completely in Zn, and completely in iron. With very highly brittle metals, cast iron and Sb, the surface-active medium again becomes effective. In this instance, its role consists in absorptive prevention of the collapse of the microcracks, the formation of which precedes brittle rupture. N. Thor

| 95 |

C.4.

Influence of preliminary cold-working of aluminum on the effectiveness of the action of active liquids during free planing. G. J. Egdane, Dabbady Abed, Nash S.S.S.R., 73, 433-7 (1951); cl. C-1, 43, 5054. — An exptl. study was made of the effectiveness of water and of BuOH in the free planing of commercially pure Al that had been cold-rolled 75, 50, 25, 17, and 0% (after annealing at 400°. Specimens 2.5 mm. thick were free planed at a const. speed of 10 cm./min., a feed of 0.2 mm., and a cutting angle of 68°. The longitudinal shrinkage of the chips on cutting dry was about 8% for specimens cold-rolled 0% and was 4.6% for specimens cold-rolled 75%. This behavior was explained by the exhaustion of slip systems and indicated that chip formation occurs at a given degree of deformation whether this deformation is produced by preliminary cold-working or by the cutting action. The specific work of dry-cutting was 95 kg. m./cc. for specimen cold-rolled 0% and was 50 for specimen cold-rolled 75%. The specific work of cutting in water was 85 kg. m./cc. at 0% and 35 at 75% cold-work, and the corresponding longitudinal shrinkage was about 4.5 and 3.0%. These two properties were essentially independent of the amt. of cold-work for cutting in BuOH. The difference in behavior between cutting dry and in BuOH is due to the higher deformation of the chip that occurs in dry-cutting. When BuOH is used in cutting a ductile metal, presumably a narrow zone of brittle material is present at the cutting edge.

A. G. Guy

YEPIFANOV (S)

Influence of an Active Liquid Medium on the Specific Cutting Work and Longitudinal Setting of the Chip in the Free Plastics of Metals

Rev. ref. 8, 2421 (In Russian). The experiments consisted of planing Al, Cu, Fe, Pb, Sn, and Zn with high-speed steel cutters having cutting angles of 54° and 64°. In order to study the effect of non polar kerosene, methyl-, ethyl-, and heptyl-alcohol, olive acid and ethyl laurate, C_6 and A amine at the following cutting speeds. The view of Kachanov and his school concerning asserts that the active media have a cutting effect on the metal which is not a cutting effect. The author of the given experiments has definite adverse effects to the view of Kachanov and cannot be attributed to these lubricating and cutting on their cutting properties. 1. The cutting action of surface active liquids is exemplified by their capacity to transform a very small zone of the metal adjacent to the cutting edge of the tool into a peculiarly brittle state, which leads to detachment of the chip at a smaller degree of deformation of the entire cutting zone. 2. The change of the sp. cutting work, under the effect of active media, takes place if the longitudinal setting of the chip. It is concluded that the basic part of the work of cutting plastic metals is expended in plastic deformation of the cutting zone, the measure of which is the longitudinal setting of the chip. The relation between the cutting work and setting is well represented by Kachanov's formula $\sigma_s = \sigma_s^0 \cdot e^{\alpha s}$ where σ_s - conditional cutting stress - dimensionally and numerically

C. A.
1951

Metallurgy and Metallography

The effectiveness of the action of liquid media in free shaving of metals. N. A. Pleteneva and G. I. Epifanov (Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 77, 1051-3 (1951).—The sp. work of cutting, A (in kg./cc.), was determined for a series of metals, in shaving at a cutting angle of 68° (88° with C), to a depth of 0.20 mm. for Al and Cu, 0.15 for Fe, Ni, and stainless steel, 0.30 for Sn, and 0.80 for Pb. In dry cutting (without liquid), the values, A_0 , are: Al 50, Cu 90, Fe 270, Ni 180, Pb 5.7, Sn 11.3, stainless steel 210, heat-resistant alloy 200. Values of the ratio A_0/A in liquid media, in the same order of the metals, are: in nonpolar hydrocarbons, 1.4-1.7, 1.7-2.0, 0.88, 1.1, 1.4, 1.3, 0.84, 0.93; in H_2O , 1.9, 1.0, 2.0, 2.0, 1.5, 1.3, 1.1, 1.1; in $MeOH$, 3.5, 1.8, 1.7, 1.7, 1.6, 1.4, 1.1, 1.0; in $BuOH$, 1.5, 1.8, 1.9, 1.6, —, 1.3, 1.0, 1.0; in $BuOH$, 4.5, 1.8, 2.1, 1.4, 1.5, 1.4, 1.2, 1.0; in C_6H_5OH , 5.0, 1.9, 2.3, 1.4, —, 1.4, —; in $AcOH$, 2.0, 1.5, 2.4, —, 1.9, 1.2, 1.2, 1.0; in $BuCO_2H$, 3.1, 1.9, 2.4, 1.8, 1.3, 1.3, 1.2, 1.1; $C_6H_5CO_2H$, 4.0, 2.1, 2.3, 1.7, 1.3, 1.3, 1.4, 1.1; in oleic acid, 4.8, 2.1, 2.2, 1.6, 1.3, 1.8, 1.5, 1.1; in $BuCO_2Et$, 3.5, 1.7, 2.6, 1.7, 1.2, 1.3, 1.0, 0.97; in $BuCO_2Et$, 3.9, 1.7, 2.3, 1.6, 1.3, 1.2, 0.93, 1.0; in $C_6H_5CO_2Et$, 5.3, 1.9, 2.2, 1.5, 1.3, 1.3, 1.0, 1.0; in $AmCO_2Et$, 5.9, 1.9, 2.3, 1.4, 1.2, 1.3, 1.0, 1.0; in CCl_4 , 5.9, 2.6, 2.8, 2.6, 0.7, 0.97, 1.8, 1.3. These data show the specificity of the effects of different liquids on different metals, and the diversity of the phenomena which obviously involve more factors than simple absorption.

YEPIFANOV, G. I.

USSR/Metals - Aluminum, Machining

11 Oct 51

"Decrease of the Zone of Plastic Deformation, Caused by Removal of a Chip, Under the Action of Active Liquid Media," G. I. Yepifanov, L. A. Shreyner, Inst of Phys Chem, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXX, No 5, pp 781, 782

Investigates effect of ethyl-laurate on extent of plastic deformation zone in surface layer of aluminum during shaping. Dry cutting produces 2 zones of cold working, high and weak, total deformation zone being $2\frac{1}{2}$ times cutting depth, while cutting in ethyl-laurate gives single zone of weak cold working equal approximately to depth of cutting. Submitted by Acad P. A. Rebinder 16 Jun 51. 221T48

YEPIFANOV, G. I.

Metal Cutting

Two theories on cutting of metals. Zhur. tekhn. fiz. 22, no. 3, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August 1952. Unclassified.

USSR/Chemistry - Metallurgy Lubricants 21 Sep 53
Metallurgy - Extrusion.

"The Effect of Lubricants on the Coefficient of
Friction during Extrusion of Metals," S.Ya. Veyler
and G.I. Yeflakov, Inst of Phys Chem Acad Sci USSR

DAN SSSR, Vol 92, No 3, pp 593-595

Studied the effect of MeOH, BuOH, and nonylic acid
on the coef of friction of steel, copper, and brass
during punch-press extrusion of these metals. Found
that these lubricants effectively reduce the coef
of friction. This reduction is due to the plasti-
cizing action of the lubricant, i.e. the layer of
268T4

metal closest to the punch is plasticized and hence
is more readily deformed. The effect is distinct
from that of external lubrication. Presented by
Acad P.A. Rebinder 11 Jul 53.

YEFLAKOV, G. I.

YEPIFANOV, Georgiy Ivanovich.

Academic degree of Doctor of Physico-Mathematical Sciences, based on his defense, 10 June 1954, in the Council of the Inst of Physical Chemistry, Acad Sci USSR, of his dissertation entitled: "Physical Bases of the External Medium on the Processes of Deformation and Destruction of Metals during Cutting."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 10, 30 Apr 55, Byulleten' MVO SSSR, No. 15, Aug 56, Moscow, pp. 5-24, Uncl. JPRS/NY-537

EFIFANOV, G. I.

USSR/Physics Techn. Physics

Card : 1/1

Authors : Shreyner, L. A. and Efifanov, G. I.

Title : Strengthening coefficient of metallic monocrystals

Periodical : Dokl. AN SSSR, 97, Ed. 1, 85 - 87, July 1954

Abstract : The phenomenon called "the strengthening coefficient" is explained. The displacement of one part of the crystal relative to the other, in a narrow band oriented in a sliding surface, is apparently the result of the non-homogeneous displacement of atoms which distort the crystal lattice and hinder free displacement. The quantitative measure of strengthening is expressed by the tangent of the sloping angle of the curve which expresses the relation between the shearing stress and the magnitude of the specific crystallographic displacement. Four USSR references. Graph.

Institution : Acad. of Sc. USSR, Instituto of Physical Chemistry

Presented by : Academician, P. A. Rebiner, March 30, 1954

EPIFANOV, G. I.

USSR/Chemistry - Physical Chemistry

Card 1/1

Authors : Epifanov, G. I., Pleteneva, N. A., and Rebinder P. A., Academician

Title : About the mechanism of the effect of active media during cutting of metals

Periodical : Dokl. AN SSSR, 97, Ed. 2, 277 - 279, July 1954

Abstract : The effect of active media is analogous to the effect of additions introduced into the metal for the purpose of improving its workability and includes only a narrow zone of disintegration. The idea about the cutting effect of active media serves as an aid in explaining the large experimental material regarding the effect of media on the deformation and disintegration processes of metals during the cutting. Cutting is the only process which produces a clear metal-surface free of any films or impurities.
Thirteen references.

Institution : Acad. of Sc. USSR, Institute of Physical Chemistry

Submitted : March 30, 1954

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 35/56

Authors : Epifanov, G. I.; Soloshko, F. P.; and Rebinder, P. A., Academician

Title : New method of determining the sliding friction coefficient and its application to the study of the adsorption-lubrication effect.

Periodical : Dok. AN SSSR 99/5, 801-804, Dec 11, 1954

Abstract : A new method is presented for the determination of the sliding-friction coefficient. The distinctive characteristic of this method is the existence of a nonstationary zone in which continuous conversion from rolling friction through mixed friction into sliding friction takes place. The stationary state of the system is the state of the pure sliding friction at which the system arrives gradually through asymptotic approximation. This asymptotic approximation of the system toward the stationary state, corresponding to the sliding friction, prevents any possibility for the origination of auto-vibration in the system. Such a system will have only a periodic vibrations which will lead it into a stable equilibrium state. Seven references: 6-USSR and 1-English (1933-1954). Graphs; drawing.

Institution: Academy of Sciences USSR, Institute of Physical Chemistry

Submitted : September 28, 1954

EPIFANOV, G. I.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 24/54

Authors : Soloshko, F. P., and Epifanov, G. I.

Title : The effectiveness of liquid media during free burning of Pb-Sb Alloys

Periodical : Dok. AN SSSR 100/3, 491-493, Jan 21, 1955

Abstract : The effectiveness of liquid media on the process of cutting a binary-component alloy (Pb-Sb) was investigated with respect to the composition of the alloy. The effectiveness of the medium was evaluated by the reduction in the specific cutting operation and by the reduction in the shrinkage of the shavings. The results indicate that the effectiveness of active liquid media during the cutting of plastic and brittle bodies is different. Three USSR references (1944-1951). Graphs.

Institution : Academy of Sciences USSR, Institute of Physical Chemistry

Presented by: Academician P. A. Rebinder, July 27, 1954

EPIFANOV, G. I.

S

✓ Effectiveness of the action of liquid media on the plastic behaviour of lead-antimony alloys. V. P. Solotkin and G. I. Epifanov (Dokl. Akad. Nauk SSSR, 1955, 100, 491-493).—Standard cutting tests on binary Pb-Sb alloys covering a range of composition and plasticity were carried out under various liquid media. The alloys consisted of a mechanical mixture of eutectic (13% Sb) with the excess component; plasticity fell with increase in antimony content until complete brittleness was reached at 15% Sb. Tests were carried out in the dry and under the following liquid media: water, Me, Et, Bu, and octyl alcohols, 4% solution of cetyl alcohol in toluene, and CCl_4 . Curves of the reduction of comparative work given by the four alcohols with increase in Sb content show that their effectiveness falls together with the plasticity to a min. at the eutectic and then begins to increase in the brittle range. CCl_4 , in contrast, showed an increase in work required for cutting pure Pb; this increase reached a max. for the alloy at ~2% Sb; the comparative work fell with increase in Sb content; and pure Sb in CCl_4 required 20% less work. Measurements by depth of cut gave results very similar to those by comparative work.

K. F. A. LINTON.

of
other

EPIFANOV, G. I.

Yaroslav G.

139. Influence of Surface Active Agents on the Disper-
sions of Mg^{2+} Elements

1. Brasília Transversal

Volume 34, Part 1, 1995, pp. 1-252, ISSN 0048-7393, Printed in Great Britain

2

YEPIFANOV, Georgiy Ivanovich, doktor fiziko-matematicheskikh nauk;
UDAL'TSOV, A.N., glavnyy redaktor; BRYANTSHEVA, V.P., inzhener, redaktor

[Asymptotic method of studying gliding friction] Asimptoticheskii
metod izucheniiia treniia skol'zheniiia. Tema 2, no. P-56-463.
Moskva, Akad. nauk SSSR, 1956 9 p. (MLRA 10:5)
(Friction)

SOVINSKI, O. I.

J
The effectiveness of liquid media in the reduction of noble

depended neither on their chem. activity nor on the activity
of the metals, and was tentatively attributed to an intensi-
fication of the strengthening of the metals in the destruc-
tion of the high temperature of friction or shear of

Mr. P. B. J. B.
1. INSTITUT Fizicheskoy Khimi Akademii
Nauk SSSR, Prof. dr. Kad. P.A. ReBintekom

YEPIFANOV, G. I.

Category: USSR / Physical Chemistry - Surface phenomena. Adsorption.
Chromatography. Ion exchange.

B-13

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30196

Author : Pleteneva N. A., Yepifanov G. I.

Inst : Academy of Sciences USSR

Title : Effectiveness of the Action of Media in Cutting of Noble Metals

Orig Pub: Dokl. AN SSSR, 1956, 110, No 3, 414-416

Abstract: A study of the effects of water and organic liquids (hydrocarbons, alcohols, acids, esters, CCl_4) on the process of cutting Ag, Au and Pt. The effectiveness of cutting action was evaluated on the basis of the ratio α of dry cutting action (A_d) and cutting action in the given medium (A_m). It was found that with Ag and Au α has a relatively low value ($\alpha \approx 1.2 - 1.6$), which is practically the same for all the liquids which were investigated. In the case of Pt $\alpha \approx 3 - 4$. Effect of the length (n) of the hydrocarbon chains of the molecules is practically nil on cutting of Ag and Au, while with Pt the α decreases with increase of n in the alcohol series

Card : 1/2

-12-

Category: USSR / Physical Chemistry - Surface phenomena. Adsorption.
Chromatography. Ion exchange.

B-13

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30196

and especially in the acid series; with equal in the effect of acids is more pronounced than that of alcohols. On the other hand the authors had shown previously (Dokl. AN SSSR 1951, 77, No 6), that with more active metals (Al, Cu, Fe) the effect of acids and alcohols is practically the same, and that it is less pronounced than with Pt. Hence, it follows that effectiveness of media, in cutting of metals, is not directly correlated with their chemical activity; their slight effect in the case of Ag and Au is due not to the chemical inertness of the metal, but to mechanical properties which are unfavorable to manifestation of the action of the medium. In particular, there are involved in these instances the extent of shrinkage of the chips and the degree of adsorptive plasticizing of the surface layers of the metal.

Card : 2/2

-13-

YEPISANOV, G.I.

137-58-5-10611

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 250 (USSR)

AUTHORS: Rebinder, P.A., Yepisanov, G.I.

TITLE: Effect of a Surface-tension Reducing Medium on Boundary Friction and Wear (Vliyanie poverkhnostnoaktivnoy sredy na granichnoye treniye i iznos)

PERIODICAL: V sb.: Razvitiye teorii treniya i iznashivaniya. Moscow, AN SSSR, 1957, pp 47-56

ABSTRACT: A literature survey is presented along with results obtained in the authors' experiments in investigating the effect of a surface-tension reducing medium on boundary friction (F) and wear. The experiments are founded on a method involving immersion of surfaces of F in excess lubricant (L), the latter being fluids ranging in polarity from water to non-polar hydrocarbon oils or a solution of a surface-tension reducing substance in a non-polar solvent. A schematic diagram of a new instrument for investigation of the physical chemical regularities of F and wear is presented. This instrument was used to study the effect of solutions of surface-tension reducing substances on the coefficient of F in boundary lubrication. It is established that in a pure benzene

Card 1/2

137-58-5-10611

Effect of a Surface-tension (cont.)

medium the coefficient of F is not constant, but upon attaining a maximum value of ~ 0.7 , corresponding to dry F , drops sharply to 0.3-0.4 and then again rises to 0.7, and so forth. The hypothesis is advanced that these fluctuations, occurring at approximately equal time intervals, are due to infinitesimal contamination by surface-tension reducing substances not discoverable by ordinary methods. When surface-tension reducing substances are introduced into benzene in gradually increasing concentrations, the magnitude of the jumps diminishes, finally disappearing, and the coefficient of F takes on a completely stable value equal to ~ 0.1 in the case of the most powerful surface-tension reducing additives. It is shown that the action of lubrication under conditions of boundary F in the case of an arbitrarily established layer of L is purely adsorptive in nature. The adsorptive reaction, which may be promoted by the purely chemical bond between polar groups and atoms of metal, determines the strength of the bond of the lubricant layer and the surfaces of the metal. The phenomenon of adsorptive facilitation of the deformation and failure of solids is examined as it affects the process of adsorption fatigue and fatigue wear of microscopic asperities on the surface of mating contacts. as is the effect of active media on the process of the cutting of metals. Bibliography: 24 references.

L.G.

Card 2/2 1. Friction--Theory

YEPIFANOV, G. I.

"The Binomial Law of Friction" P. 60-69, in book Research in the Physics of Solids, Moscow, Izd-vo AN SSSR, 1957. 277 p. Ed. Bol'shanina, M. A. Tomsk Universitet, Siberskiy fiziko-tekhnicheskiy institut.

Personalities: Deryagin, B. V.; Kragel'skiy, I. V., and Minayev, N. I.
Materials tested: electrolytic copper, high purity aluminum. Armco iron, brass, steel EI -417, and alloy EI -437. There are 7 figures, 3 tables, and 5 references, 3 of which are Soviet.

This collection of articles is meant for metallurgical physicists and for engineers of the metal-working industry. This book contains results of research in the field of failure and plastic deformation of materials, mainly of metals. Problems of cutting, abrasion, friction, and wear of solid materials (metals) are discussed.

YEPIFANOV, G.I.

Asymptotic method for the study of sliding friction. Trudy Inst.
fiz.khim. no.6:174-180 '57. (MIRA 11:10)
(Friction--Measurements)

AUTHOR

YEPIFANOV G.I.

PA - 3046

TITLE

On the Dependence of Conditional Cutting Stress on the Supply of Material.

PERIODICAL

(O zavisimosti uslovnogo napryazheniya rezaniya ot podchi -Russian)

Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 4, pp 799-802 (U.S.S.R.)

Received 6/1957

Reviewed 7/1957

ABSTRACT

First, the opinions expressed by other author in connection with this problem are discussed. The author believes that what has been said by A.M. ROZENBERG in "The Dynamics of Milling" (1945) is, on the whole, correct, but does not serve as a sufficient basis from which to obtain a quantitative expression for the dependence of the conditional cutting stress on the thickness of the cut. ROZENBERG explains the lack of direct proportionality between the cutting force and the thickness of the cut by an inhomogeneous distribution of the deformation over the cross section of the cutting. According to the author's opinion it is necessary to proceed from the point of view of the scale factor when explaining this dependence. As samples grow smaller, their properties with regard to strength are known to increase, particularly within the range of small dimensions. It is noteworthy that the modification of these properties (in dependence of the size of the sample) is expressed by the same formula as also the dependence of the conditional cutting stress depends on the thickness of the cut $\sigma = \sigma_0 + (c/a)$. Here σ denotes the strength characteristic of the material, a - the linear dimension (diameter of the sample to be torn, length of the diagonal of the

Card 1/2

On the Dependence of Conditional Cutting Stress on the Supply of Material.

PA - 3046

pyramid impression when determining the strength etc.). J_0 and c are constants. Cutting is a local destruction of metal within a narrow zone with following displacement of individual elements of the cutting. The details of this process of destruction are discussed in short. A conditional increase of shearing strength due to a scale factor must increase cutting stress. The following formula is obtained for the principal component: $P_z = k_1 ab + k_2 b$. Here a denotes the thickness of the cut, b - the width of the cut, k_1 and k_2 are coefficients which depend on cutting conditions. In conclusion some information is given concerning the cutting of brittle material.

(with 2 illustrations)

ASSOCIATION Institute for Physical Chemistry of the Academy of Science of the USSR
PRESENTED BY REBINDER, P.A., Member of the Academy
SUBMITTED 20.6.1956
AVAILABLE Library of Congress
Card 2/2

AUTHOR: Yepifanov, G. I. 20-114-4-24/63

TITLE: Friction as Resistance to Shear of Thin Surface Layers of Solids (Treniye kak soprotivleniye svigivaniyu tonkikh poverkhnostnykh sloyev tverdykh tel)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4,
pp. 764-767 (USSR)

ABSTRACT: First the present stage of the problem is shortly described and reference is made to some relevant preliminary works. In the first test series the relation between the friction layer and the adhesion of the slide-block to the surface of the sample was investigated. Adhesion was determined as follows: A lubricant was inserted under the slide-block which came to a standstill but which was not unloaded. The stress was then determined which is necessary for moving the slide-block in a direction opposite to that of the initial motion. When the slide-block was slowly pushed aside the tangential force increased up to a certain maximum value and then it sharply decreased to a value which corresponds to the frictional force in the given lubricant. This sudden change was usually accompanied by a characteristic sound. The author

Card 1/3

Friction as Resistance to Shear of Thin Surface Layers of Solids 20-114-4-24/63

here equates the adhesive power with the difference between the maximum deflection of the dynamometer and the frictional force when a lubricant is present. The results thus obtained are compiled in a table, according to which the adhesive force does not amount to more than 15% of the dry friction. Therefore the resistance caused by adhesion bridges (in contrast to the opinions of various scientists) probably constitutes only a small portion of the frictional force. The surface S_0 on which the metal practically shifts during friction is considerably larger than the total surface of the cross section of the bridges of molecular intermeshing. For the purpose of estimating S_0 the author investigated the surface of a sample under the slide-block and then metallographically determined the plastic deformation caused by the motion of the slide-block under the surface of the sample. If the amount of the area of displacement is correctly estimated the frictional force practically agrees with the shearing resistance of the surface layer of the metal. There are 2 figures, 2 tables, and 9 references, 7 of which are Soviet.

Card 2/3

Friction as Resistance to Shear of Thin Surface Layers of Solids 20-114-4-24/63

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the AS USSR)

PRESENTED: December 11, 1956, by P. A. Rebinder, Member, Academy of Sciences, USSR

SUBMITTED: December 11, 1956

Card 3/3

BARTENEV, O.M.; YEFIFANOV, O.I.

Nature of external friction of metallic surfaces [with sum-
mary in English]. Inzh.-fiz.shur. no.12:18-24 '58.
(MIRA 11:12)

1. Pedagogicheskiy institut imeni Potenkina, Vucherniy mashino-
stroitel'nyy institut, g. Moskva.
(Friction)

AUTHOR:

Yepifanov, G. I.

20-118 6-17/43

TITLE:

An Experimental Check of the Two-Term Friction Law
(Eksperimental'naya proverka dvukhchilennogo zakona treniya)

PERIODICAL:

Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 6,
pp. 1113-1115 (USSR)

ABSTRACT:

The present paper checks experimentally the two-term friction law

$$F = S_c J + kN S_n c = S_c J + kN.$$

The term $S_c J$ of this formula describes the dependence of the frictional force on the plane of displacement and the term kN takes into account the rôle of the normal forces (among them also of the adhesion forces) on the development of the frictional force. The author studies here the relative rôle of these two terms. The first series of experiments investigates the dependence of the amount of the plane of displacement, of the frictional force, and of the coefficient of friction on the standard load by means of a device which is similar to the device described in a previous paper by

Card 1/3

An Experimental Check of the Two-Term Friction Law

20-118-6-17/43

the author (ref 1). The first diagram shows such a dependence for the friction couple: spheric ball of hardened high-speed steel-fresh-cut aluminum surface. With increasing normal load N the displacement surface gradually increases in the case of friction more slowly, however, than N . In complete agreement with the increase of the displacement surface also the frictional force F increases. The coefficient of friction μ decreases gradually with increasing normal load. This is explained by the absence of a direct proportionality between the displacement surface and the normal load. In the second series of experiments the dependence of the frictional force on the normal pressure was investigated under following conditions: The true contact surface could develop only up to a certain strictly fixed value, and remained constant after having reached this value in spite of further increase of normal pressure on the contact. The special method worked out by the author for such investigations is based upon the application of a chisel in the case of which amount of the contact surface of the front edge is strictly limited. A further diagram illustrates the dependence of the frictional force

Card 2/3

An Experimental Check of the Two-Term Friction Law

20-118-6-17/43

on the normal load for the friction couple high-speed steel - fresh-cut aluminum surface. The first and also the second series of experiments lead to the same final conclusions concerning the rôle of the separate terms of the two-term friction law: The frictional force is determined chiefly by the term that depends on the total displacement surface developing in the friction. The rôle of the term which does not depend on the amount of the displacement surface and which describes the dependence of the frictional force on the normal pressure is not so important in contrast to the opinion of several researchers.

There are 3 figures and 5 references, 4 of which are Soviet

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR
(Institute of Physical Chemistry, AS USSR)

PRESENTED: April 17, 1957, by P. A. Rebinder, Member of the Academy of Sciences USSR

SUBMITTED: April 9, 1957

Card 3/3

SOV/20-123-4-24/53

18(7) AUTHORS: Yepifanov, G. I., Glagolev, N. I., Rebinder, P. A., Academician

TITLE: The Influence of Surface-Active Media on the Surface-Hardening of Metals (Vliyanie poverkhnostno-aktivnykh sred na poverkhnostnyy naklep metallov)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 4, pp 663-666
(USSR)ABSTRACT: When investigating the hardening of metals it is necessary to distinguish between true and effective hardening. The true hardening of the slipping surfaces means increase of the shearing strength along a given surface with growing absolute shearing. The effective strengthening of a single grain as a single crystal characterizes the increase of the resistance of the metal to plastic deformation with increasing deformation and is expressed by the effective hardening coefficient $\lambda = d\tau/da$, where a denotes the specific crystallographic displacement in the grain. For the true hardening coefficient k it holds that $k = d\tau/ds$, where τ denotes extreme tangential tension and s - the absolute shear. Between k and λ the connection $\lambda = hk$ holds, where h denotes

Card 1/4

SOV/20-123-4-24/53

The Influence of Surface-Active Media on the Surface-Hardening of Metals

the average density of the slipping layers. The effective coefficient of hardening thus depends not only on the true strengthening capacity of the slipping surfaces but also on the degree of dispersion of the crystal during deformation. The present paper describes the results obtained by the complex investigation of the kinetics of the formation of the hardened layer in the surface hardening of technically pure iron in air and in some active media. In this connection, the influence exercised by some given effects produced by the hardening instrument (small roll) upon the microhardness of the sample surface, the frictional force, the structure of the hardened surface of the sample, the specific work of hardening, and the temperature at the place of contact between roll and sample, are investigated. These investigations were carried out by the method developed by T. Yu. Lyubimova (Ref 3) in an improved form. A diagram shows, by way of an example, the results obtained by experiments carried out in air and in a 0.2% solution of stearic acid in Decalin. The microhardness H_0 increases with an increase of the number of hardening actions: this increase is irregular and passes

Card 2/4

SOV/2o-123-4-24/53

The Influence of Surface-Active Media on the Surface-Hardening of Metals

through several maxima. A very characteristic quantity is the differential work of the plastic pressing-in of a hole ($a = dA/dV$). This quantity conveys an idea of the degree of resistance offered by the sample to growing plastic deformation. Surface-active media exercise a dual influence upon the process of metal surface hardening: As a result of the reduction of strength due to adsorption, they facilitate the development of plastic deformation during the first stages of hardening and they cause an intense strengthening of the surface layer during the following stages of hardening. The strengthening and plasticizing effect produced by surface-active media is able to influence the process of metal cold-working considerably. In the cutting of metals the strengthening and plasticizing effects of these metals usually lead to the same result, viz. to a reduction of the degree of volume-deformation of the cuttings and of the surface layer of the workpiece. There are 3 figures and 8 Soviet references.

Card 3/4

S/686/61/000/000/001/012
D207/D303

AUTHOR: Yepifanov, G. I.

TITLE: Effect of adhesion on the process of external friction
of clean surfaces

SOURCE: Soveshchaniye po voprosam teorii sukhogo treniya i obra-
zovaniya chastits iznosa pri sukhom trenii. Riga, 1959,
21-27

TEXT: The author reports an investigation of dry friction on
freshly-cut and, therefore, clean surfaces of tin and lead. A sli-
der, loaded with 25 kg on tin and with 12.5 kg on lead, was moved
along a plane surface of tin or lead. The slider was a rod with a
hemispherical end of 18 mm radius; it was made of one of the fol-
lowing materials: Copper, brass, commercial iron, a magnesium al-
loy, coconut shell, and ivory. The slider was washed in benzene be-
fore tests. Tangential friction forces were measured with a dynamo-
meter and adhesion was determined by finding a vertical force nec-
essary to separate the slider from the tin or the lead surface. ✓

Card 1/3

S/686/61/000/000/001/012
D207/D303

Effect of adhesion ...

Adhesion forces were nearly equal to friction forces in the case of iron, brass and copper sliders, but they were weak in the case of coconut shell, ivory and the Mg alloy. In all cases the friction force per unit actual contact area was approximately equal to the shear strength of tin or lead. These facts indicated that friction was primarily due to surface roughness (slip in the top layers of lead or tin, scratching of lead or tin by the harder sliders, shear of microscopic projections) rather than to adhesion (sticking together of smooth surfaces). This conclusion was confirmed by further experiments on friction during planing of lead and tin by cutters made of the same materials as the sliders, and by experiments on sliding a metal rod with a hemispherical end on aluminum. The following equation is proposed for the friction force: $F = S\tau_0 + kN$, where S is the total actual contact area, τ_0 is the shear strength at zero normal stress, k is a coefficient which gives the dependence of the tangential on the normal stresses, and N is the normal load. There are 5 figures, 1 table and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to the

Card 2/3

Effect of adhesion ...

S/686/61/000/000/001/012
D207/D303

English-language publication reads as follows: F. Bowden and D. Tabor, *The friction and lubrication of solids*, Oxford, 1950.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, AS USSR)

Card 3/3

S/686/61/000/000/002/012
D207/D303

AUTHOR: Yepifanov, G. I.

TITLE: Dependence of the force of friction on the normal load
(the fundamental law of friction)

SOURCE: Soveshchaniye po voprosam teorii sukhogo treniya i obra-
zovaniya chstits iznosa pri sukhom trenii. Riga, 1959,
29-40

TEXT: The author reports experimental work intended to establish
the fundamental law of dry sliding friction. In one series of ex-
periments a hardened steel slider with a hemispherical end of 6 mm
radius was loaded with 5 - 100 kg and was moved across clean alum-
inum and copper surfaces. This slider was cleaned before tests with
a fine abrasive and washed in pure benzene. Friction forces and
contact areas were measured with a dynamometer and a microscope
respectively. In another series of experiments lead, tin, aluminum,
copper, brass, iron and zinc were cut with a hardened high-speed
tool in such a way that the friction between the cutter and the

Card 1/3

Dependence of the force ...

S/686/61/000/000/002/012
D207/D303

shavings occurred over an area which was constant under varying loads. It was found that external friction of metals sliding over clean metal surfaces involves plastic slip in surface layers of the mechanically weaker member of the friction pair. The friction force F obeyed the equation $F = ST_0 + kN$, where S is the area over which plastic slip occurs, T_0 is the shear strength of the weaker metal at zero normal load, k is the ratio of the shear strength to the tensile strength of the weaker metal, and N is the normal load. The value of S was found to be the dominant parameter, while N affected friction only insofar as it altered the area S . When S was constant (the second series of experiments, with cutters), the friction force F was independent of N . These results contradict the equation proposed by B. V. Deryagin (Ref. 7: ZhFKh, v. 5, 8, 9, 1934: Sbornik: Treniye i iznos v mashinakh (Friction and Wear in Machines), 3, Izd. AN SSSR, 1949): $F = \mu(N + a_0 S_a)$ where μ is the true coefficient of friction, N is the normal load, S_a is the area over which ad-

Card 2/3

Dependence of the force ...

S/686/61/000/000/002/012
D207/D303

hesion occurs, and a_0 is the "specific adhesion". There are 8 figures, 2 tables and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: P. Bridgman, Proc. Am. Acad. Arts. Sci., 71, no. 9, 1937.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR)

Card 3/3

24(6)

SOV/139-59-1-6/34

AUTHORS: Yepifanov, G. I. and Minayev, N. I.TITLE: Investigation of the Dependence of the Friction Force
on the Real Area of Friction and the Normal Load
(Issledovaniye zavisimosti sily treniya ot istinnoy
ploshchadi treniya i normal'noy nagruzki)PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika,
1959, Nr 1, pp 35-43 (USSR)ABSTRACT: A great draw back of most of the work devoted to
experimental study of the process of external friction
lies in the fact that the experiments were carried out
without knowing the magnitude of the real friction area
which really does participate in the friction process.
The friction theories prevailing at present are based
on the incorrect concept that the real area of friction
is the area of contact of the rubbing pairs. This
complicates understanding the process of external
friction and also complicates the physical interpretation
of experimentally established facts. This relates
particularly to the dependence of the coefficient of
external friction on the normal load. In earlier work
one of the authors of this paper (Refs 8-10) applied

Card 1/6

SOV/139-59-1-6/34

Investigation of the Dependence of the Friction Force on the Real
Area of Friction and the Normal Load

the concept of V. D. Kuznetsov (Ref 1) and of Bowden and Tabor (Ref 12) on the physical nature of the process of external friction and attempted to justify the point of view that this process consists basically of plastic shear which proceeds inside relatively thin surface layers of the rubbing pairs. As a result of this, the real friction area is that along which the process of shear takes place during friction. This point of view follows directly from analysis of the basic types of interaction of solid surfaces which bring about external friction (Refs 8,9). To verify experimentally this concept, the friction was studied of a semi-spherical slide block made of hardened steel along freshly cut surfaces of the following metals: tin, lead, aluminium, copper, zinc, bronze, steels 45 and U12, iron, alloys EI437, VT2 etc. It was found that displacement of the slide block along a freshly cut surface of the specimen brings about the formation of a "stagnant" zone (build-up) and that the displacement of the slide is not effected by external

Card 2/6

SOV/139-59-1-6/34
Investigation of the Dependence of the Friction Force on the
Real Area of Friction and the Normal Load

Card 3/6

sliding along the surface of the specimen but by shifting (shear) along the internal boundary of this zone. Thus, in the case of pure metallic rubbing pairs, the friction does not consist in cutting off the molecular bridges occurring at the points of physical contact, as was suggested by Bowden, but by shear along the internal surface of the "stagnant" zone. On increasing the normal load N there will be an increase in the real area of friction S and of the friction force. Thereby, with increasing N the specific friction force f will remain practically unchanged and will equal approximately the shear strength of the material of the specimen (Ref 10); this indicates that the friction force is determined *de facto* by the friction surface and is almost independent of the normal pressure. Since this latter conclusion is considered of great importance, the authors studied the behaviour of the friction force under conditions such that the friction area remained practically unchanged in spite of the continuous increase in the normal load. These experiments

SOV/139-59-1-6/34

Investigation of the Dependence of the Friction Force on the
Real Area of Friction and the Normal Load

were carried out by means of a cutting tool with a limited friction area. In the experiments chips of a pre-determined thickness between 0.02 and 1.0-3.0 mm were planed off by means of a specially built cutting tool, a sketch of which is shown in Fig 3, p 38. This tool consisted of a high speed steel wedge with an angle of 30° at the apex and a facet with an angle of 25° , whereby the width of the facet varied between 0.2 and 1.0 mm. In Fig 5 the dependences are graphed of the horizontal and the vertical components of the planing force of brass as a function of the depth of cut. Fig 6 shows a typical curve of the dependence of the friction force on the normal force applied during planing of aluminium by means of the special cutting tool used in the experiments, which had a limited area of friction. In Fig 7 the dependence is graphed of the friction force on the normal force for iron, copper, brass, aluminium, lead and tin. It can be seen from the graphs, Fig 7, that qualitatively the picture is the same for all metals.

Card 4/6